October 25, 1949.

Dr. P. R. Edwards,
Public Health Service
Communicable Disease Center,
Laboratory Division,
Chamblee, Georgia.

Dear Dr. Edwards:

About three years ago, I received from Mr. Borman at the Connecticut State Labs. a culture labelled " S. coli 1, 458", which he told me at the time was received from you. In the course of our current studies of the Salmonella group, looking for genetic recombination as in E. coli K-12, we have accumulated some evidence that components of this strain will undergo recombination with each other.

As received, this culture turned out to be a mixture. When streaked out on EMB-lactose agar, about equal numbers of Lac+ and Lac- were seen. The Lac+ component required histidine for growth on synthetic medium; the Lac- had no growth factor requirements. Biochemical mutations have since been induced in each of these stocks, by ultraviolet irradiation and selection with penicillin, and these substrains then tested for recombination. It would be important for us to be sure that bothsthe Lac- and the Lac+ were variants of an originally pure S. coli 1. Would you be able to test these cultures serologically for this dientity? The favor would be greatly appreciated. Dr. W. Braun told me that the AMS is having great trouble with the stability of the Vi antigen in this culture, and womdered whether our observation could have anything to do with it, but I don't see how. I am sending slants of the two cultures under separate cover.

If recombination here can be verified, we shall probably undertake to do some serological work, although the organism does not seem too promising for our purposes. According to the textbbooks, the diagnostic formula is XXXI; -; 1,5 [Vi]. Have you ever noticed any form variation in the somatic antigen, or have you had occasion to determine whether an alternate phase can be obtained with the aid of 1,5 antiserum?

coli 1 is not the only Salmonella that may have a recombination mechanism; some very promising results were obtained with certain typhimurium cultures. But lysogenic bacteriophages turned up which confused our resukts very considerably, mainly by killing off many of the recombination cells. I am strongly impressed with the role that lysogenic phages may play in Salmonella variation, especially in mixed flora, since it turns out that most or all Salmonella cultures are infectedcwith one or more latent phaggs. In addition to the favor already requested, I would also appreciate receiving your current stock of E. coli 1 for comparison. Thanks very much for your previous, and I hope, future, assistance.

Sincerely,

Joshua Lederberg
Assistant Professor of G enetics